Charles Darwin University

Final Examination

Family Name						
Given Name/s						
Student Number						
Teaching Period	Semester 2, 2018					

PHA211 – Fundamentals of Pharmaceutics	DURATION	
	Reading Time:	10 minutes
	Writing Time:	180 minutes

INSTRUCTIONS TO CANDIDATES

Please ensure that your Name and Student Number are indicated clearly on your Answer Booklets and at the top of the multiple choice answer sheet provided.

There are 2 (**TWO**) sections (A and B) for this paper:

Section A contains Forty (40) Multiple Choice Questions. Answer all questions on the College Multiple Choice Answer Sheet supplied. Total marks allocated: Forty (40). Suggested time allocation: ONE hour (60 minutes).

Section B contains Six (6) Short Answer and Calculation Questions. Answer all questions in the 20-page Booklet provided. Show all relevant steps in your calculations and include all relevant units in your answers. Total marks allocated: Sixty (60). Suggested time allocation: TWO hours (120 minutes).

Total marks for this exam paper: 100

EXAM CONDITIONS

<u>You may begin writing from the commencement of the examination session.</u> The reading time indicated above is provided as a guide only.

This is a CLOSED BOOK examination

Any non-programmable calculator is permitted

No handwritten notes are permitted

No dictionaries are permitted

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
No additional printed material is permitted	1 x 20 Page Book 1 x Scrap Paper College Multiple Choice Answer Sheet Formula Sheet/s

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Section B
Short Answer and Calculation Questions
Total Marks for this section: 60 (Sixty)
Answer ALL Six (6) questions
This section should be answered in the 20-page Answer Booklet provided.
Marks for each question are indicated.
Show all relevant steps in your calculations and include all relevant units in your answers.
Suggested Time allocation for Section B: **120 minutes**

Question 1 (10 marks)

a The theoretical limits for porosity are often exceeded in practice. Why is this so?

(2 marks)

b What approaches can be used to increase the solubility of a drug for formulation purpose? Discuss with examples.

(5 marks)

c Calculate the surface area to volume ratio for spherical particles with an average diameter of 1 nm.

(3 marks)

Question 2 (10 marks)

a Explain how pH and pKa affect the solubility of drugs?

(3 marks)

b What are co-solvency and partition co-efficient? Why are these useful in pharmaceutical formulations?

(4 marks)

c The pKa of the weakly basic drug is about 8.0 and the pH of the drug solution is about 5.0. What percentages of this drug will be in ionized and un-ionized form?

(3 marks)

Question 3 (10 marks)

a Why preservatives are important for liquid products? Describe the possible consequences of microbial contamination of pharmaceutical products.

(3.5marks)

b What are the criteria for an ideal preservative? Name any preservatives used commonly in pharmaceutical formulations.

(3.5 marks)

c Identify the role of each ingredient in the following formulation.
DEMAZIN COLD RELIEF CLEAR SYRUP

Chlorpheniramine maleate 1.25mg/5mL
Phenylephrine hydrochloride 2.5mg/5mL
Sucrose
Sorbitol
Vanilla
Ethanol
Water
Propyl hydroxybenzoate

(3 marks)

Question 4 (10 marks)

a Compare the followings:

i. emulsion and suspension
ii. flocculated and deflocculated suspensions

(3 marks)

b How can different types of emulsions be identified?

(3 marks)

c What is meant by HLB value? Calculate the total required HLB (RHLB) value for the following formula (total amount 100g).

Liquid paraffin (HLB 12)	–	35%
Wool fat (HLB 10)	–	1%
Cetyl alcohol (HLB 15)	–	2%
Emulsifier system	–	7%
Water	–	to 100 g

(4 marks)

Question 5 (10 marks)

a What is colloid? Why colloidal system is important for drug delivery?

(3 marks)

b Define buffer with examples and buffer capacity.

(2 marks)

c What do you mean by isotonic solution? Why 0.9% NaCl solution is isotonic to blood cells? What may happen if 2.0% NaCl solution is injected into the blood?

(3 marks)

d Describe briefly the desirable qualities of an acceptable suspension.

(2 marks)

Question 6 (10 marks)

a What are ointments? Describe the factors that need to be considered while selecting ointment bases.

(4 marks)

b Compare (similarities and differences) between ointments and creams.

(3 marks)

c Calculate, using the following formula, the amounts of ingredients needed to produce 50g of ointment:

Zinc oxide	–	2 parts
Titanium oxide	–	1 parts
Fatty ointment base	–	17 parts

(3 marks)

END of Section B

END of Exam Paper